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LaValle, Diane <PHMSA>

DEPT. OF TRANSPORTATION
DOCKETS

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From: Nelson, Sherrie <PHMSA>

Sent: Friday, March 18, 2005 2:14 PM

To: LaValle, Diane <PHMSA>

Subject: FW: New Exemption Application - 10 Yr Retest on 6 and 12 pcks

2005 APR -5 A 9:19

-----Original Message-----

From: Fisher, Donny L. [mailto:FISHERDL@airproducts.com]

Sent: Friday, March 18, 2005 1:52 PM

To: Posten, Ryan <PHMSA>

Cc: Butler, Christopher R.; Fink, William R.; DiGirolamo, Joseph H.; Reid, Malcolm; Toughiry, Mark <PHMSA>; Freeman, Cheryl <PHMSA>; Croll, Dennis W.; Nelson, Sherrie <PHMSA>; Rudy, Francis P.; Persa, Larry J.

Subject: New Exemption Application - 10 Yr Retest on 6 and 12 pcks

Ryan,

Attached is an application for a new exemption. This exemption would authorize a 10 year retest period in place of the current 5 year retest for cylinders that are part of cylinder packs/bundles. The hazardous materials that would be filled in these cylinder packs/bundles are already authorized for a 10 year retest in single cylinder applications.

<<Cyl Bundle Retest.doc>>

Don Fisher

Air Products and Chemicals, Inc.
610-481-7293

Exemption Application

I. APPLICANT: Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195-1501

Contact: Donny L. Fisher
(610) 481-7293
(610) 706-7029 (fax)
e-mail: fisherdl@airproducts.com

Applicant is a resident of the United States of America
18 March 2005

II. REGULATIONS AFFECTED:

49 CFR 180.209 (b) DOT 3A or 3AA cylinders (1) a cylinder conforming to specification 3A or 3AA with a water capacity of 56.7 kg (125 lb) or less that is removed from any cluster, bank, group, rack or vehicle each time it is filled, may be re-qualified every ten years instead of every five years, provided the cylinder conforms to all of the following conditions:

- (i) The cylinder was manufactured after December 31, 1945,
- (ii) The cylinder is used exclusively for, air; argon; cyclopropane; ethylene; helium; hydrogen; krypton; neon; nitrogen; nitrous oxide; oxygen; sulfur hexafluoride; xenon; chlorinated hydrocarbons, fluorinated hydrocarbons and mixtures thereof that are commercially free from corroding components; permitted mixtures of these gases, and permitted mixtures of these gases with up to 30% by volume carbon dioxide, provided the gas has a dew point at or below (-52 F) at 1 atmosphere.
- (iii) Before each refill the cylinder is removed from any cluster, bank, group, rack or vehicle and passes the hammer test specified in CGA Pamphlet C-6.
- (iv) The cylinder is dried immediately after hydrostatic testing to remove all traces of water.
- (v) The cylinder is not used for underwater breathing
- (vi) Each cylinder is stamped with a five pointed star at least one-fourth of an inch high immediately following the test date.

And

49 CFR 172.301 (c) Exemption Packagings

III. MODES OF TRANSPORTATION:

Motor vehicle, rail freight and cargo vessel

IV. HAZARDOUS MATERIALS:

Air, Compressed, UN 1002, 2.2

Argon, Compressed, UN 1006, 2.2

Helium, Compressed, UN 1046, 2.2

Hydrogen, Compressed, UN 1049, 2.1

Nitrogen, Compressed, UN 1066, 2.2

Compressed Gas, N.O.S., UN 1956, 2.2 (mixtures of hydrogen, argon, helium and/or nitrogen)

Compressed Gas, Flammable, N.O.S. UN 1954, 2.1 (mixtures of hydrogen, argon, helium and/or nitrogen)

V. BACKGROUND:

Packaging instructions found in Section P-200 of both the ADR (European Agreement Concerning the International Carriage of Dangerous Goods by Road) and the UN Transportation of Dangerous Goods- Model Regulations, permit hazardous materials with the proper shipping names listed in Section IV above to be transported in bundles of cylinders with a test period of ten (10) years.

Air Products is seeking an exemption to the re-test period for cylinders in bundles (6 and 12 packs) containing those hazardous materials listed in Section IV above in that the re-test period be extended to ten (10) years without the cylinders having to be removed from the bundle at each time of fill and that the hammer test need not be performed.

VI. BASIS

1. Technical Rational

- a. Cylinders properly protected from exterior corrosion (painted) and properly secured in a bundle, cluster, bank, pack, group or frame are exposed to no more physical damage from corrosion or movement during shipment than cylinders that are transported loose. In fact the bundles, packs or frames offer an addition level of protection for the cylinders that are contained therein.
- b. Note that Air Products is not requesting cylinders filled with any quantity of carbon dioxide be considered as part of this exemption request, therefore internal corrosion from exposure to carbonic acid need not be a concern. (hammer test)
- c. As a safety control the dew point for the gases or mixture of gases filled into bundles, clusters, banks, packs, groups or frames, filled under this exemption shall be less than (-52F) at 1 atmosphere, thus internal corrosion from exposure to moisture shall not be a concern. (hammer test)
- d. ADR (European Agreement Concerning the International Carriage of Dangerous Goods by Road) and the UN Transportation of Dangerous Goods- Model Regulations, permit hazardous materials with the proper shipping names listed in Section IV above to be transported in bundles of cylinders with a test period of ten (10) years.
- e. The hazardous materials that would be filled in these cylinders/bundles are already authorized for a 10 year retest in single cylinder applications.

- f. Air Products would like to have the option of retesting these cylinders by either hydrostatic means or UT/AE testing. There is a precedent set for allowing UT/AE testing for cylinder re-qualification in exemption DOT-E 13312. Air Products would like to use similar wording as found in that exemption

“Cylinders must be periodically requalified using either hydrostatic requalification or ultrasonic / acoustic emission testing in accordance with existing DOT exemptions applicable to DOT Specification 3A and 3AA cylinders.”

2. Economic Rational

- a. Bundles, clusters, banks, packs, groups or frames, of specialty electronics gases (high purity) and mixtures thereof ship all around the world, Air Products is at an economic disadvantage as re-qualifying a 6 cylinder package has costs in excess of \$1220 associated with the re-qualification of that 6 cylinder package. (disassemble, cylinder re-qualification, re-prepping the cylinder to meet the contamination level of the electronics industry, and finally re-assembly) Atmospheric gases like, argon helium, hydrogen, nitrogen, are demanding ever decreasing margins in the world market place as the unit costs of integrated chips continues to fall. Not having a level playing field with Europe and the rest of the world jeopardizes American positions/jobs.
- b. A specific situation is the ability of Air Products to supply its American customers with the highly specialized BIP® (built in purifier) product in 12-cylinder packs. Only helium, nitrogen, and argon are filled in these cylinders. The valves, cylinders, and built-in purifiers are designed for a write-off of 10 years to obtain a profitable return on the product. At 5 years the economics are only marginally acceptable. Under the requirement to fully rebuild the packs at 5 years, which compels Air Products to also install new purifiers to replace marginally used purifiers, the total costs do not allow Air Products to sell this product profitably to its US customers. The product sales in Europe are growing dramatically where the economics are based on a 10-year retest period.

VII. SAFETY CONTROL MEASURES

- a. Packagings prescribed are DOT specification DOT 3A or 3AA-2265 (or higher) cylinders with internal volumes less than 125 lb water. Filled with gases listed in Section IV above in any bundle, cluster, bank, pack, group or frame. Limited to 12 cylinders per bundle, cluster, bank, pack, group or frame.
- b. Operational controls- Gases introduced into the cylinders shall have a dew point less than minus (52 F) at 1 atmosphere be non-toxic and non-corrosive.
- (i) Carbon dioxide in any concentration can not be added to the cylinders in the bundle, pack or frame.
 - (ii) Gases that are toxic and/or corrosive can not be added to the cylinders in the bundle, cluster, bank, pack, group or frame. Examples: Neither 2 ppmv Carbon monoxide in Nitrogen or 2 ppmv Hydrogen chloride in Nitrogen would not be permitted.

- c. Exemption marking of the packagings is not necessary since there would be, for emergency response or transportation personnel, no safety justification for marking the package with the exemption number. The information required to determine if the bundle, cluster, bank, pack, group or frame shipped under the terms of the exemption can be found using the cylinder re-qualification stampings and upon shipping paper as required in 49 CFR 172.203 (a). Likewise, carrying this exemption along with the shipment of these cylinders, provides no useful information to emergency response personnel, thus, Air Products recommends that the exemption only be kept at the facilities that fill, re-ship or use these cylinders.

VIII. SUMMARY

There are no risks associated with permitting DOT 3A or 3AA cylinders rated 2265 psig and higher, that are transported in bundles, clusters, banks, packs, groups or frames from being re-qualified every ten years vs. the current five year requirement, when the contents of the cylinders is limited to non-toxic and non-corrosive materials.

IX. PROPOSED SCHEDULE OF EVENTS

The request to commence on or about June 1st 2005 and continue for a period until such time as the DOT regulations and/or exemptions concerning re-qualification of bundles, clusters, banks, packs, groups or frames are modified, updated, and/or suspended.

X. PETITION

Air Products and Chemicals, Inc. respectfully requests that the petition for this exemption be reviewed and that the department look favorably upon our request.

Donny Fisher
William R. Fink